

# Diving and Hyperbaric Medicine

*The Journal of the South Pacific Underwater Medicine Society (Incorporated in Victoria) A0020660B  
and the European Underwater and Baromedical Society*

**SPUMS**

*Volume 41 No. 4 December 2011*

**EUBS**



## **The physiology of apnea diving to depth**

**Hyperbaric oxygen for mandibular cysts**

**Pre-dive exercise and intravascular bubbles**

**Performance and safety of a middle-ear implant**

**CNS oxygen toxicity over 20 years in Freemantle**

**Professional divers are not stressed by a chamber dive**

**Managing diving accidents by phone - the Swiss experience**

## PURPOSES OF THE SOCIETIES

To promote and facilitate the study of all aspects of underwater and hyperbaric medicine  
To provide information on underwater and hyperbaric medicine  
To publish a journal and to convene members of each Society annually at a scientific conference

### SOUTH PACIFIC UNDERWATER MEDICINE SOCIETY

#### OFFICE HOLDERS

|                          |                               |
|--------------------------|-------------------------------|
| <b>President</b>         |                               |
| Mike Bennett             | <president@spums.org.au>      |
| <b>Past-President</b>    |                               |
| Chris Acott              | <cacott@optusnet.com.au>      |
| <b>Secretary</b>         |                               |
| Karen Richardson         | <secretary@spums.org.au>      |
| <b>Treasurer</b>         |                               |
| Jan Lehm                 | <treasurer@spums.org.au>      |
| <b>Education Officer</b> |                               |
| David Smart              | <education@spums.org.au>      |
| <b>Public Officer</b>    |                               |
| Andrew Fock              | <a.fock@alfred.org.au>        |
| <b>Chairman ANZHMG</b>   |                               |
| David Smart              | <david.smart@dhhs.tas.gov.au> |
| <b>Committee Members</b> |                               |
| Glen Hawkins             | <webmaster@spums.org.au>      |
| Peter Smith              | <executive@spums.org.au>      |
| Guy Williams             | <guyw@imap.cc>                |

#### ADMINISTRATION

|                            |                         |
|----------------------------|-------------------------|
| <b>Membership</b>          |                         |
| Steve Goble                | <admin@spums.org.au>    |
| <b>Editorial Assistant</b> |                         |
| Nicky McNeish              | <editor@dhmjournal.com> |

#### MEMBERSHIP

For further information on the Society, or to complete a membership application, go to the Society's website: <[www.spums.org.au](http://www.spums.org.au)>

The official address for SPUMS is:  
c/o Australian and New Zealand College of Anaesthetists,  
630 St Kilda Road, Melbourne,  
Victoria 3004, Australia

### EUROPEAN UNDERWATER AND BAROMEDICAL SOCIETY

#### OFFICE HOLDERS

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>President</b>                |                                 |
| Peter Germonpré                 | <peter.germonpre@eubs.org>      |
| <b>Vice President</b>           |                                 |
| Costantino Balestra             | <Constantino.Balestra@eubs.org> |
| <b>Immediate Past President</b> |                                 |
| Alf Brubakk                     | <alf.brubakk@eubs.org>          |
| <b>Past President</b>           |                                 |
| Noemi Bitterman                 | <noemi.bitterman@eubs.org>      |
| <b>Honorary Secretary</b>       |                                 |
| Joerg Schmutz                   | <joerg.schmutz@eubs.org>        |
| <b>Member at Large 2011</b>     |                                 |
| Dr Fiona Sharp                  | <fiona.sharp@eubs.org>          |
| <b>Member at Large 2010</b>     |                                 |
| J-M Pontier                     | <jean-michel.pontier@eubs.org>  |
| <b>Member at Large 2009</b>     |                                 |
| Andreas Møllerløgken            | <andreas.mollerlokken@eubs.org> |
| <b>Liasion Officer</b>          |                                 |
| Phil Bryson                     | <phil.bryson@eubs.org>          |

#### ADMINISTRATION

|  |                             |
|--|-----------------------------|
| <b>Honorary Treasurer &amp; Membership Secretary</b>                       |                             |
| Patricia Wooding   | <patricia.wooding@eubs.org> |
| 16 Burselm Avenue,<br>Hainault, Ilford<br>Essex, IG6 3EH<br>United Kingdom |                             |
| <b>Phone &amp; Fax:</b>  | +44-(0)20-85001778          |

#### MEMBERSHIP

For further information on EUBS and to complete a membership application go to the Society's website: <[www.eubs.org](http://www.eubs.org)>

### DIVING and HYPERBARIC MEDICINE <[www.dhmjournal.com](http://www.dhmjournal.com)>

#### Editor-in-Chief:

|  |                                    |
|--|------------------------------------|
| Michael Davis  | <editor@dhmjournal.com>            |
| c/- Hyperbaric Medicine Unit<br>Christchurch Hospital, Private Bag 4710<br>Christchurch, New Zealand |                                    |
| <b>Phone:</b>  | +64-(0)3-364-0045 or (0)3-329-6857 |
| <b>Fax:</b>  | +64-(0)3-364-0817 or (0)3-329-6810 |
| <b>European Editor:</b>  |                                    |
| Peter Müller   | <peter.mueller@eubs.org>           |

#### Editorial Board:

|                              |
|------------------------------|
| Mike Bennett, Australia      |
| Alf Brubakk, Norway          |
| Peter Germonpré, Belgium     |
| Jane Heyworth, Australia     |
| Jacek Kot, Poland            |
| Simon Mitchell, New Zealand  |
| Neal Pollock, USA            |
| Martin Sayer, United Kingdom |
| David Smart, Australia       |

**Submissions to the Journal should be sent to:** <[submissions@dhmjournal.com](mailto:submissions@dhmjournal.com)>

*Diving and Hyperbaric Medicine* is published jointly by the South Pacific Underwater Medicine Society  
and the European Underwater and Baromedical Society

# Instructions to authors

(Short version, updated December 2011)

*Diving and Hyperbaric Medicine* welcomes contributions (including letters to the Editor) on all aspects of diving and hyperbaric medicine. Manuscripts must be offered exclusively to *Diving and Hyperbaric Medicine*, unless clearly authenticated copyright exemption accompanies the manuscript. All manuscripts will be subject to peer review. Accepted contributions will also be subject to editing. An accompanying letter signed by all authors should be sent. Contributions should be sent to:

*The Editor, Diving and Hyperbaric Medicine,  
C/o Hyperbaric Medicine Unit, Christchurch Hospital,  
Private Bag 4710, Christchurch, New Zealand.  
E-mail: <editor@dhmjournal.com>*

## Requirements for manuscripts

Documents should be submitted electronically. The preferred format is Microsoft® Office Word or rich text format (RTF). Paper submissions will not be accepted. All articles should include a title page, giving the title of the paper and the full names and qualifications of the authors, and the positions they held when doing the work being reported. Identify one author as correspondent, with their full postal address, telephone and fax numbers, and e-mail address supplied. The text should generally be subdivided into the following sections: a structured Abstract of no more than 250 words, Introduction, Methods, Results, Discussion, Conclusion(s), Acknowledgements and References. Acknowledgements should be brief. Legends for tables and figures should appear at the end of the text file after the references. Conflicts of interest and funding sources should be identified.

The text should be 1.5 lines spaced, using both upper and lower case. Headings should conform to the current format in *Diving and Hyperbaric Medicine*. All pages should be numbered. Underlining should not be used. SI units are to be used (mmHg is acceptable for blood pressure measurements; bar for cylinder pressures); normal ranges should be shown. Abbreviations may be used after being shown in brackets after the complete expression, e.g., decompression illness (DCI) can thereafter be referred to as DCI.

Preferred length for **Original Articles** is up to 3,000 words. Inclusion of more than five authors requires justification, as does that of more than 30 references. **Case Reports** should not exceed 1,500 words, and a maximum of 15 references. Abstracts are required for all articles. **Letters to the Editor** should not exceed 500 words and a maximum of five references. Legends for figures and tables should generally be shorter than 40 words in length.

**Illustrations, figures and tables** must NOT be embedded in the wordprocessor document, only their position indicated, and each should be submitted as a separate file.

**Tables should** be presented either with tab-separated columns (preferred) or in table format. No gridlines, borders

or shading are to be used.

**Illustrations and figures** should be submitted in TIFF, high resolution JPG or BMP format. If figures are created in Excel, submit the complete Excel file. Large files (> 10 Mb) should be submitted on disk.

**Photographs** should be glossy, black-and-white or colour. Colour printing is available only when it is essential and will be at the authors' expense. Indicate magnification for photomicrographs.

## References

The Journal reference style is based closely on the the *International Committee of Medical Journal Editors (ICMJE) Uniform Requirements for Manuscripts*. Examples are given in detail at:

<[http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html)> (last updated August 2009). References must appear in the text as superscript numbers at the end of the sentence after the full stop.<sup>1,2</sup> Numbered them in order of quoting. Use Index Medicus abbreviations for journal names:

<<http://www.nlm.nih.gov/tsd/serials/lji.html>>.

Examples of the exact format for a standard paper and a book are given below:

- 1 Freeman P, Edmonds C. Inner ear barotrauma. *Arch Otolaryngol.* 1972;95:556-63.
- 2 Hunter SE, Farmer JC. Ear and sinus problems in diving. In: Bove AA, editor. *Bove and Davis' diving medicine*, 4th ed. Philadelphia: Saunders; 2003. p. 431-59.

Accuracy of references is the responsibility of the authors.

**Manuscripts not complying with the above requirements will be returned to the author(s) before being considered for publication.**

## Consent

Studies on human subjects must comply with the Helsinki Declaration of 1975 (revised 2000) and those using animals must comply with health and medical research council guidelines or their national equivalent. A statement affirming ethics committee (institutional review board) approval should be included in the text. A copy of that approval (and consent forms) should be available if requested.

## Copyright

Authors must agree to accept the standard conditions of publication. These grant *Diving and Hyperbaric Medicine* a non-exclusive licence to publish the article in printed form in *Diving and Hyperbaric Medicine* and in other media, including electronic form. Also granting the right to sub-licence third parties to exercise all or any of these rights. *Diving and Hyperbaric Medicine* agrees that in publishing the article(s) and exercising this non-exclusive publishing sub-licence, the author(s) will always be acknowledged as the copyright owner(s) of the article.

**Full instructions to authors (revised July 2011) may be found on the DHM Journal, EUBS and SPUMS websites and should be consulted before submission.**

## **DIVER EMERGENCY SERVICES PHONE NUMBERS**

### **AUSTRALIA**

**1800-088200 (in Australia, toll-free)**  
**+61-8-8212-9242 (International)**

### **SOUTHERN AFRICA**

**0800-020111 (in South Africa, toll-free)**  
**+27-10-209-8112 (international, call collect)**

### **NEW ZEALAND**

**0800-4DES-111 (in New Zealand, toll-free)**  
**+64-9-445-8454 (International)**

### **EUROPE**

**+39-06-4211-8685 (24-hour hotline)**

### **SOUTH-EAST ASIA**

**+852-3611-7326 (China)**  
**+10-4500-9113 (Korea)**  
**+81-3-3812-4999 (Japan)**

### **UNITED KINGDOM**

**+44-07740-251-635**

### **USA**

**+1-919-684-9111**

**The DES numbers (except UK) are generously supported by DAN**

---

### **DAN Asia-Pacific DIVE ACCIDENT REPORTING PROJECT**

This project is an ongoing investigation seeking to document all types and severities of diving-related accidents.

Information, all of which is treated as being confidential in regard to identifying details, is utilised in reports on fatal and non-fatal cases.

Such reports can be used by interested people or organisations to increase diving safety through better awareness of critical factors.

Information may be sent (in confidence unless otherwise agreed) to:

DAN Research

Divers Alert Network Asia Pacific

PO Box 384, Ashburton VIC 3147, Australia

Enquiries to: <research@danasiapacific.org>

---

### **DIVING INCIDENT MONITORING STUDY (DIMS)**

DIMS is an ongoing study of diving incidents. An incident is any error or occurrence which could, or did, reduce the safety margin for a diver on a particular dive. Please report anonymously any incident occurring in your dive party.

Most incidents cause no harm but reporting them will give valuable information about which incidents are common and which tend to lead to diver injury. Using this information to alter diver behaviour will make diving safer.

**The Diving Incident Report Form can be downloaded from, or an on-line form accessed, at the DAN AP website:<www.danasiapacific.org>**

---

### **DISCLAIMER**

**All opinions expressed in this publication are given in good faith and in all cases represent the views of the writer and are not necessarily representative of the policies or views of SPUMS or EUBS or the editor and publisher.**

# CONTENTS

## Diving and Hyperbaric Medicine Volume 41 No. 4 December 2011

### Editorials

- 181 The Editor's offering
- 182 The President's page

### Original articles

- 183 **The effect of pre-dive exercise timing, intensity and mode on post-decompression venous gas emboli**  
Karen M Jurd, Julian C Thacker, Fiona M Seddon, Mikael Gennser and Geoffrey AM Loveman
- 189 **Telemedicine in the management of diving accidents: correlation of phone-assessed symptom severity with clinical findings**  
Christian Wölfel, Guido Schüpfer, Christoph Konrad, Peter Knessl and Jürg Wendling
- 195 **Effect of hyperbaric oxygen on bone healing after enucleation of mandibular cysts: a modified case-control study**  
Krishna Kant Tripathi, Aditya Moorthy, Ranjan Chambala Karai, Girish Rao and Prakesh Chandra Ghosh
- 202 **Oxygen toxicity seizures: 20 years' experience from a single hyperbaric unit**  
Neil D G Banham
- 211 **The effects of increased pressure, variation in inspired gases and the use of a mask during dry chamber dives on salivary cortisol in professional divers**  
Janne Tikkinen, Ari Hirvonen, Kai Parkkola and Martti A Siimes

### Review article

- 216 **Predicting performance in competitive apnea diving. Part III: depth**  
Erika Schagatay

### Technical report

- 229 **Suitability of the partially implantable active middle-ear amplifier Vibrant Soundbridge® to hyperbaric exposure**  
Christoph Klingmann, Angela Klingmann and Theodoros Skevas

### Critical appraisal

- 233 **Does hyperbaric oxygen administration decrease side effects and improve quality of life after pelvic irradiation?**  
David Smart

### Book reviews

- 234 **Decompression illness, a simple guide and practical advice on the recognition, management and prevention of DCI**  
Rob Edward and Selina Davis
- 235 **Wound care certification study guide**  
Yvonne Denny

### Continuing professional development

- 236 **Fluid balance in diving and diving-related injury**  
John AS Ross

### Letter to the Editor

- 238 **The death of buddy diving?**  
P David Cooper

### Obituary

- 239 **R W 'Billy Bob' Hamilton**

### EUBS notices & news

- 241 **38th EUBS Annual Scientific Meeting 2012**  
First announcement
- 242 **Minutes of the Executive Committee (ExCom) of EUBS Meeting, Gdansk Medical University, Gdansk, 26 August 2011**
- 244 **Minutes of the EUBS General Assembly, Gdansk, 28 August 2011**

### SPUMS notices & news

- 246 **Diploma of Diving and Hyperbaric Medicine**
- 247 **SPUMS 41st Annual Scientific Meeting 2012**  
Preliminary announcement
- 248 **Rear Admiral Robyn Walker**
- 249 **ANZCA Certificate in Diving and Hyperbaric Medicine**
- 249 **SPUMS Award, Hyperbaric Technicians and Nurses Association ASM 2011**

- 250 **The Poetry Doctor**  
John Parker

- 250 **Courses and meetings**

- 252 **Instructions to authors**  
(short version)

Diving and Hyperbaric Medicine is indexed on MEDLINE, SciSearch® and Embase/Scopus